

## Changes in Leadership Appraisal as a Function of the Stress of a Simulated Panic Situation

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Research by Mintz and Kelley, Condry, Dahke, and Hill left unresolved the question of what level of personal threat leads to group incoordination of "panic behavior." The present study set out to resolve this issue and to explore the additional relationship between leadership and behavior in the panic situation. The dependent variables were Likert-type questionnaire items designed to investigate the level of responsibility attributed to a leader by members of a group as a function of four variables: (a) two levels of stress (threat of shock or of small monetary loss); (b) two levels of leadership authority (elected or appointed); (c) two conditions of leadership ("me-last" or "me-first"); and (d) group success or failure. The specific questions were adapted from earlier pilot work by Sulzer and Sisti. One hundred and forty-four males were run in this  $2 \times 2 \times 2 \times 2$  factorial design with a nonfactorial control group. The task setting, which required subjects to retrieve their wooden cones through the same hole, was designed to be analogous to the kind of situation that would occur in a theater fire where only one narrow exit existed. The results support the contention of Kelley that group incoordination (panic) increases under personal threat. Additional results were: (a) Leaders facilitated achieving the goal of safe exit; (b) elected leaders were given more responsibility and were seen as more competent than appointed leaders, but only when the stress is comparatively low, as otherwise the difference in evaluation narrows and reverses; and (c) success or failure seems to have had little effect on the leader's evaluation by the group.

The problem of panic behavior has long been of practical and theoretical significance. Panic has contributed to a needlessly high loss of life in natural and man-made disaster situations. While our knowledge of other aspects of group behavior has increased significantly in the past two decades, our knowledge of panic behavior has shown very little substantive increase since LaPiere's (1938) intuitive analysis of the problem.

The literature that exists on panic consists of post hoc impressions, recollections, and speculations with little substantive material amenable to systematic interpretation. In the entire literature on panic, there have been only three empirical investigations prior to this current study. There are three possible reasons: (a) Panic behavior is a form of group behavior that does not permit rigid, precise control to the degree we normally de-

sire for experimental research in psychology; (b) J. P. R. French (1944/1964) did simulate a fire in a locked room containing subjects. This was in complete violation of current ethical standards and points to needed methodological innovation; (c) French's method lacked systematic controls and yielded results which are difficult to express in quantitative terms (Schultz, 1964).

An approach to the study of panic behavior with fewer methodological problems is provided by a simulation of the sort used by Alexander Mintz (1951). Mintz was in conflict with the earlier views on the question of the role of perceived danger. Mintz explicitly denied that intense fear (or "emotional excitement") is responsible for nonadaptive group behavior. Mintz emphasized that persons are merely reacting to the reward structure of the situation. As long as escape is orderly, each sees that his interests lie in continuing to cooperate with others. However, when a few individuals begin to create a disturbance in the use of the exit, the others will

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recognize the threat to their own escape and perceive that their only hope lies in trying to push through. Thus, the individual is no less rational or moral in the panic than in any other situation. He is always in pursuit of his own interests. Mintz characterized this pursuit in terms of potentially available reinforcement and punishment contingencies and predicted that if the reward structure is unstable or unpredictable for the participants, their behavior will reflect this uncertainty and, in turn, be unstable and unpredictable. Thus, Mintz saw a direct relationship between the specifics of reward and the specific behaviors of the group.

Mintz's experimental paradigm was designed to show that it is possible, systematically, to produce disorganized, uncooperative, nonadaptive group behavior resulting in "traffic jams." The situation was represented as a game where a subject could win or lose money depending on how successful he was in pulling on a string to remove a wooden cone from a narrow-necked bottle. Success was defined in terms of succeeding under arbitrary time limits or avoiding wetting the cone as the bottle slowly filled with water from the bottom. In a situation where no tangible rewards or losses were evident there was little evidence for "jam ups." Mintz claimed support for his reward-structure theory of panic.

In 1965 Kelley, Condry, Dahlke, and Hill challenged Mintz's methods and conclusions. The most important criticism they made was that Mintz's method could not be considered to test the effects of *danger*. Mintz's subjects were promised small monetary rewards, ranging from 10¢ to 25¢, for escaping from the bottle in time, and even smaller fines, from 1¢ to 10¢ for failing to do so. It is, according to Kelley et al., unlikely that the results from this situation shed much light on behavior under conditions of high stress.

Kelley et al. stated that a queue is the logical escape plan if planning time were available. Without planning time, or a leader to provide an "instant" plan, one would expect the behavior of the group to be a function of the most dominant responses in the response hierarchy, since it has often been

shown that an increase in arousal yields a reversion to dominant response patterns (Cottrell, 1971; Zajonc, 1965). Therefore, under the pressure of perceived threat, the dominant response of dashing to the exit, even if maladaptive, would be expected.

More than a decade after Mintz, Kelley, and his co-workers set out to explore panic behavior, four factors were of interest to the present author: (a) the perceived level of threat; (b) the size of the collectivity; (c) susceptibility of group members to social influence; and (d) the availability of "confidence" responses concerning anticipated success of the outcome for the group.

The attempt by Kelley et al. to constructively criticize earlier work and improve methodology was fraught with problems. The procedures for establishing a "group" and "panic" and the necessary relationships lacked face validity and ignored Mintz's findings of the value of face-to-face confrontation in producing appropriate relationships.

The level of perceived threat does seem to be an important factor, and small monetary loss seems a poor parallel to the threat of real physical danger. Thus, the earlier methodologies already mentioned are to be refined by this study in the hope of clarifying the antecedents of "panic behavior."

Kelley et al. pointed out Mintz's lack of concrete proposals for dealing with panic behavior. It is believed that relevant situational variables must be identified before such proposals can be made. Leadership variables seem to be relevant factors.

#### *Leadership*

Effective leadership behavior is best defined as those acts that are functionally related to goal achievement. Acts instrumental to achieving the goals of the group include making suggestions for action, evaluating movement toward the goal, preventing activities irrelevant to the goal, and offering solutions for goal achievement. It is in this latter context that leadership was studied in this experiment.

#### *Group Success and Failure*

To the extent that group members are goal oriented, it follows that successful leaders will

be viewed quite differently by their followers than less productive leaders. If, as Selznick (1957) says, the purpose of a leader is to "define the ends of group existence, to design an enterprise distinctly adapted to these ends, and to see that the design becomes a living reality" (p. 37), then it is reasonable to assume a devaluation of the leader who is not successful or leads an unsuccessful group. Julian, Hollander, and Regula (1969) and Sisti (1972) found just this result. This kind of analysis, what Hollander and Julian (1968, 1970) call transactional analysis, is similar in concept to the reward-structure analysis offered by Mintz. In transactional terms, the individual seeks success (escape from the panic-producing stimuli in the present study) and this success is a function of the group and its leader. The leader who fulfills expectations and helps to achieve group goals provides a rewarding resource for others in exchange for status, esteem, and greater influence. This is an extension of the logic-of-exchange theory as espoused by Thibaut and Kelley (1959). Thus, the leader gives something and gets something; and what he gets contributes to his legitimacy insofar as he is "validated" in his role by his followers.

In stressful situations the relationship between perceived legitimacy of the leader and success seems emphasized. Sargent and Williamson (1966) point out that an open threat to the survival of the group is an important factor in bringing out leadership tendencies. They reason: "Undoubtedly the most devoted followers are attached to leaders who have effectively solved a major crisis" (p. 431). A crisis affecting a group increases the probability that the group will react favorably to an effective action by the leader and reject the leader who, by his failure, takes on aversive qualities.

#### *Source of Authority: Leader Legitimacy*

A leader has been distinguished from a head, in that a leader's authority is accorded him by his followers, whereas the authority of a head derives from some external source (Gibb, 1954). There is evidence that an elected supervisor, who is a leader rather than a head, is able to control work output more

effectively than an assigned leader because his power is seen as having greater "legitimacy" (Raven & French, 1958).

Thus, the leader's source of authority affects the leader's legitimacy in the perception of the group members. Secord and Backman (1964, 1974) state that leader legitimacy is acquired through a formal recognition of the leader's role. In a bipolar fashion, the only other source of authority would be from outside the group as when a leader is designated or appointed by an outside authority. Since these could be viewed on an ingroup, outgroup basis a differential value could be assigned to these two different leaders by the group members. McGinnies (1970), Gibb (1954), Raven and French (1958), Hollander and Julian (1970), Thibaut and Kelley (1959), and Sisti (1972) have found support for this hypothesis. Julian et al.'s (1969) results suggested that election, rather than making a leader more secure, made him more vulnerable to censure if he either was initially perceived to be incompetent or subsequently failed to secure a successful outcome as spokesman for the group. While this finding alone does not sustain a generalization that the appointed leader is necessarily more firmly entrenched, it does support the conclusion that the leader's source of authority is perceived and reacted to as a relevant element in the leadership process.

Thibaut and Kelley (1959) and Blake and Mouton (1961) documented the differential reaction of followers to their elected or appointed representatives. Their results indicate that elected leaders (a) have their directive attempts reacted to in a less hostile manner; (b) are initially seen as more intellectually competent than appointed leaders; and (c) are seen as having more procedural skills than their appointed counterparts.

#### *Leadership Style*

The concept of "leader style" would include the differential aspects of action taken by different leaders in the same type of situation. Virtually all of the research on leader style under stress has centered around the characteristics identified in the original Lewin, Lippitt, and White study (1939) (Hamblin,

1958; Hook, 1943; Waring, Dwyer, & Junkin, 1939/1968; White & Lippitt, 1960).

A specific aspect of leader style seems relevant to the situation of high stress and limited escape possibilities. A question of importance is: Does the leader "lead" his group by actually existing first ("me-first" leader) and thus guaranteeing his own safety, or does the leader offer to "go down with the ship," ("me-last" leader) potentially martyring himself for the good of the group? This aspect of leadership style is unique and opens a new avenue for the exploration of leader-follower relations. On the basis of a just-world principle (Lerner, 1965), the group reaction to the martyr would be one of devaluation. The person who sees someone suffer misfortune will be motivated to believe that the unfortunate victim in some sense merited his fate. There is supporting data relevant to this assertion (Lerner, 1965, 1966; Shaw & Sulzer, 1964; Walster, 1966).

It is possible, therefore, that the captain going down with his ship may be seen as behaving appropriately, for he was responsible for the ship and its passengers. Likewise, the group leader in the panic situation should, by the same reasoning, be seen as responsible for the outcome. A successful outcome "forgives all sins" and even elevates the leader who risks self-sacrifice (martyr) to hero status (Julian et al., 1969; Torrence, 1961; Walster, 1966). On the other hand, group failure might lead to significantly more condemnatory evaluations of the leader with special disfavor for the martyred leader.

#### *Attribution of Responsibility*

Most past leadership research has focused primarily on the leader. Only recently has the group members' evaluation of the leader's role been of empirical interest (Hollander & Julian, 1970; Sisti, 1972). An important determinant of the evaluation is the amount of responsibility which the group members attribute to a group leader for a particular task outcome.

Sulzer (1964) found that the most potent determinant in the attribution of responsibility is that of the perceived causal structure, as exhibited in five levels of responsibility

proposed by Heider (1958). Heider maintained that positively seen, high-status persons are perceived as being more responsible for positive events and more internally directed. Thus, the elected (internal high-status) leader should be (a) more effective (Raven & French, 1958) and (b) attributed more responsibility than the more negatively seen, lower status appointed leader. A study by Thibaut and Riecken (1965) predicted that leaders initially "caused" by external or internal controls (appointment and election, respectively) should receive differentially attributed levels of responsibility. It was found that the behavior of high-status persons was perceived to be internally caused and low-status persons as externally caused. Thus, high status seems to mean elected, internally controlled, and more responsible. Low status is the mirror image. This study adds more data to this issue.

More recent research has found that a person will be judged more stringently if the outcome is a failure than if it is a success (e.g., Julian et al., 1969; Walster, 1966). In Julian et al. (1969) it was also shown that elected leaders were blamed more for the negative group outcome than were the appointed leaders. Lerner (1965) reports that an appointed partner in a dyad is held to be more responsible for negative outcomes and this adds support to Heider's view.

In the present study an interaction was predicted for the effects to task outcome and leader style. Successful martyrs are "heroes" and high-status (Torrence, 1967) and successful leaders who conform to expectancies in light of the reward-punishment contingencies are high-status, and thus these should be seen as internally caused leader styles with high attribution of responsibility. Failure and martyrdom should be very low-status and externally controlled perceptions should exist. The attribution should be differential in favor of the high-status leaders as Thibaut and Riecken (1965) predict.

#### *Hypotheses*

The present study investigated the level of responsibility attributed to a leader by members of a group in a simulated panic

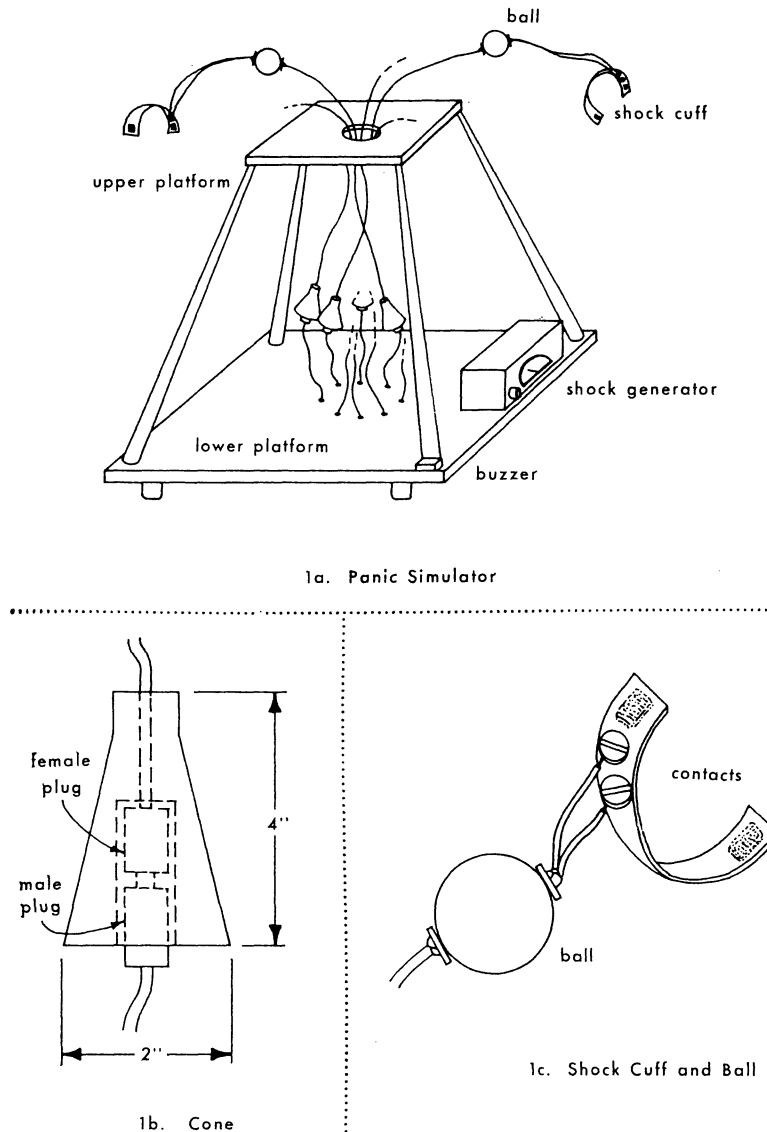


FIGURE 1. Panic simulator and component parts.

situation with four variables: (a) two levels of stress (threat of shock or of small monetary loss); (b) two levels of leadership authority (elected or appointed); (c) group success or failure; and (d) two styles of leadership ("me first" or "me last").

It was predicted that the level of stress would be greater in the shock condition, which in turn would emphasize the effect of stress significantly more than monetary loss on the leadership variables. This increased stress should increase group incoordination by re-

ducing cooperative pressures and increasing self-interest pressures. The leaders will, therefore, be seen as more valuable (higher attribution of responsibility) in the high-stress conditions than in the low-stress situation.

Elected leaders were expected to receive more attribution of responsibility than appointed leaders for the task outcomes and this effect would interact with the style of leadership as the preceding analysis above would predict.

## METHOD

*Subjects*

One hundred and forty-four white college age males (18–24 years of age) were induced to participate in this study by being offered, in exchange for their participation, a chance to win one of four cash prizes given away by random drawing at the end of the data collection period of the experiment. Two \$100 checks and two \$50 checks were the prizes.

*Apparatus*

Three rooms were used. Two approximately 30 × 12 foot (9.1 × 3.7 m) rooms served as waiting room and questionnaire room, respectively. A third room, 8 × 12 feet (2.4 × 3.7 m), was labeled the “escape” room where the emergency simulation apparatus was placed.

Figure 1 gives the shapes and dimensions of the cones and the “panic simulator” in the escape room and shows how the wires were attached to the subject, cone, and shock generator. The cones were made of balsa wood and the exits stand of 1-inch (2.54 cm) plywood. The stand was painted white and the cones were various bright and distinctly different colors.

The stand consisted of two platforms. The larger, lower platform (24 × 24 × 1 inches; 61 × 61 × 2.54 cm) stood on four 6 inch (15.2 cm) legs and held a Lafayette shock generator with a dial on one side that had a scale from 1 to 100 units on its dial. Drilled through the center of the platform was a series of six .25-inch (.635 cm) holes forming a circle at the center of the platform base. These holes were for the six wires that led from the shock generator, under the platform, through the holes to the cones. The second smaller (12 × 12 × 1 inches; 30.5 × 30.5 × 2.54 cm) platform stood 23 inches (58.4 cm) above the lower platform on four legs which were bolted to both platforms. In the center of the smaller platform a hole was cut of just sufficient size to allow passage of one cone at a time. A funnel with its tip removed was bolted below the exit hole so that the flat-topped cones would not catch on the opening.

The wires from the shock generator through the lower platform to the cones were white, multistrand, two-wire lamp cord. These wires were secured under the lower platform by a knot in the cord, thus preventing tension during the experiment from disconnecting the wires from the shock generator. The cord terminated in a female jack fitting.

Inside each cone the female jack was connected to a male jack fitting (see Figure 1b). The wire from the male jack passed out the top of the cone, through the upper platform exit hole, through a 2-inch (5.1 cm) diameter red, solid rubber ball, with the wire knotted on each side of the ball, and then fastened to an elastic cuff (see Fig. 1c). The cuff consisted of an elastic strip with “velcro” fasteners on each end allowing for adjustability and secure fastening of the cuff to the wrist of any subject. Two copper

bolts attached to the cuff and to the wires provided contacts for the electric current. The net result was a shock cuff for each of the six subjects (four subjects and two confederates) and a red ball to pull on to remove the cones from the emergency situation.

The shock generator had a hand-operated switch on a 10-foot (3.04 m) cord that allowed remote operation by the experimenter. Thus, with the hand switch on, shock passed from the generator, through the jack in the cones to the shock cuff. Shock could be stopped by turning the remote hand switch off, turning the on-off switch on the generator to the off position, or by pulling the cone through the “escape” hole in the upper platform where the lower cord would pull up taut and continued tension caused the jacks to separate, breaking the circuit to the shock cuff.

A second 10-foot (3.04 m) remote switch operated a buzzer mounted on the board next to the shock generator.

A 22-item questionnaire was constructed using items from unpublished sources on attribution of responsibility (Sisti, 1972; Sulzer, 1964). These studies were used as pilot work that provided pretested questions on the various components of the experimental situation.

*Design*

The experimental variables combined in a 2 × 2 × 2 × 2 factorial design (Stress × Leadership Authority × Leadership × Outcome) with a nonfactorial control condition analyzed separately.

*Stress.* Two kinds of motivation to escape were used. Replicating Mintz's work was a monetary loss condition where 25¢ was won or lost. In a condition where shock was the threat, a painful sample shock (5 mA) was given before the experimental trial and the participants were told that the shock following failure to escape would be far more painful.

The control group was designed to allow the test of the hypothesis of increased group incoordination as a function of the level of fear, threat, or panic. Mintz (1951) claimed his threat of small monetary loss was adequate to produce “paniclike” behavior. Kelley et al. (1965) disputed this.

*Leadership authority.* Leaders (who were confederates in the experiment) were either elected or appointed.

*Leadership.* Leaders provided two kinds of leadership, either the me-first leader who escaped first, reducing danger to himself if his leadership were followed, or the me-last leader, who volunteered to go last, thus having the greatest risk of loss. The control condition had no leader.

*Outcome.* The groups either succeeded or failed; that is, the last person (in the me-last condition, the leader; in the me-first condition, the other confederate) did not make it out when time was up, resulting in being “shocked” or monetary loss.

### *Procedure*

The subjects were randomly assigned to a 1-hour experimental session at the time they signed up for the experiment. Confederates were also randomly assigned. Upon arrival at the waiting room the four actual subjects for each session found two early arrivals—the experimental confederates. When the total group of six had assembled, they were moved into the testing room where each sat at one of six booths that were lettered A, B, C, D, E, or F. A letter matching the booth letter was pinned to each person's shirt and the experiment was "explained" as a study of panic behavior and leadership.

At this point a "leader" for the group was either elected by supposed secret ballot or "arbitrarily" appointed by the experimenter. In either case one of the confederates was always manipulated into being the leader. The control group had no leader and this step was omitted.

All six participants then moved with the experimenter into the small "panic" room where the apparatus awaited them. The door was closed on the now-crowded room.

The device, described in the apparatus section, was called a panic simulator and it was explained and demonstrated carefully to the group. Any questions concerning its function and method of use were answered.

The shock cuffs were attached and a shock sample of 5 mA was given to all subjects. The meter scale on the shock generator was pointed out and since the needle deflection at 5 mA was about  $\frac{1}{4}$  of the scale on the meter, the subjects were told that the "real" shock would be eight times the intensity of the sample. A knob on the generator labeled "shock intensity" was then twisted clockwise. In the money condition the cuffs were attached, but there was no shock generator present in the room and 25¢ was given to each subject. The subjects were told that they could lose this money if they did not fulfill the conditions of the escape, and that they could keep it if they did escape.

In capsule form the situation was as follows: All six participants (4 subjects and 2 confederates) were cuffed to the wires that lead to the different-colored cones which in turn lead through their plugs to wires that lead to the shock generator. When a very loud (approximately 80–90 dB, SPL) buzzer was activated by remote wire by the experimenter, conversation was all but impossible and the escape was to take place. The appointed or elected leader was permitted to explain his plan of escape for the group for only 5 sec preceding the buzzer. This buzzer had a threefold purpose: (a) It effectively suppressed conversation making unlikely any attempt to usurp leadership or confound the manipulation by added comment, (b) it acted as an arousing stimulus increasing the stress and, of course, (c) it signaled the "escape" period. During the 5 sec one of two prearranged plans were espoused by the leader-confederate. In one plan the leader said, "Me first [pointing to himself] then you, you, you [around

the circle] . . . and you last!," pointing to the other confederate. In the other plan the leader said, "You first [pointing to the confederate] then you, you, you, [around the circle] . . . and me last!" In the first plan the me-first leader was set up, and in the second plan the me-last leader. In both cases a confederate was always first and last in the sequence. This sequence was a parallel of the queue suggested by Kelley et al. (1965) as the logical solution of the problem of escape through a limiting exit.

At the start of the buzzer, which occurred immediately at the end of the 5-sec "leadership" period, escape was to occur. During the explanation by the experimenter to the subjects it was repeatedly stressed that the escape time before their time was up and shock (or monetary loss) occurred was very short, but left undefined.

In successful groups the buzzer remained on until everyone escaped, regardless of any other factor. In the failure groups the buzzer terminated just when the confederate (either the me-last leader or the second confederate) was the only one left with his cone still in the apparatus. The confederate then feigned very great pain or sincere disappointment at the loss of his quarter. Thus, in actuality, only the brief sample shock was ever actually received by subjects.

As quickly as possible, the six participants were uncuffed and returned to their respective letter-labeled booths in the testing room to fill out the questionnaire.

After completion of the questionnaire the confederates were introduced and a thorough debriefing followed where all ruses were exposed and explained. The subjects were assured that the raffle was real and that they were now eligible to win. The importance of not disclosing what had occurred was stressed and everyone was asked if they had heard about the experiment from anyone who had participated in an earlier group. Only one group had to be discarded because of this problem, and a replacement group was run.

The subjects were thanked and dismissed, exiting through a side door so that the confederates would not encounter subjects arriving for the next session.

Additionally, a control condition consisting of two groups was run. These two groups were four-man leaderless groups that were required to escape as best as they could from a situation of threatened shock or small monetary loss. Every attempt was made to equate these two groups with their "led" counterparts on all aspects of the situation except that no leader of any kind was ever mentioned.

## RESULTS

### *Manipulation Checks*

Part of the questionnaire used in evaluation included three items designed to tap whether the participants perceived the dependent variable manipulations as intended. There were errors in perception at a rate of

4.8%. This 95.22% accuracy was deemed only of borderline adequacy so the conservative alpha level of .01 was chosen to assist in assuring the validity of the results. Findings of differences between means with probability levels greater than .01 are considered trends only.

#### Factor Analysis

Separate factorial analyses of variance were conducted for each question on the questionnaire and the total questionnaire score for each subject. Many questions proved to be redundant measures of the same thing. It had not been possible to anticipate completely this redundancy because of the disjointedness of the previous research in this area.

Previous work in this area predicted that there should be a "leader competency" component to the data (Hollander & Julian, 1970) and also an "attribution of responsibility" component (Sisti, 1972). With this in mind a principal components factor analysis with varimax rotation (Veldman, 1967) was conducted on the 16 questions that ultimately constituted the questionnaire. The number of items was reduced to 16 from 22 by discarding the manipulation checks, and,

TABLE 1  
ANALYSIS OF VARIANCE ON FACTOR SCORES OF  
"LEADER COMPETENCE"

Source of variation <sup>a</sup>	df	SS	MS	F
1	1	2.25781	2.25781	5.4233*
2	1	.00781	.00781	
3	1	.63281	.63281	
4	1	.94531	.94531	
12	1	.32031	1.32031	
13	1	.07031	.07031	
14	1	.00781	.00781	
23	1	.38281	.38281	
24	1	.00781	.00781	
34	1	.19531	.19531	
123	1	.63281	.63281	
124	1	.38281	.38281	
134	1	.19531	.19531	
234	1	.63281	.63281	
1234	1	.07031	.07031	
Within replicates	112	46.62500	.41629	
Total	127	54.36719		

<sup>a</sup> Source of variation: 1 = Stress: shock versus monetary loss; 2 = Leadership authority: elected versus appointed; 3 = Outcome: success versus failure; 4 = Leader style: me-first versus me-last.

\*  $p < .01$ .

TABLE 2  
ANALYSIS OF VARIANCE ON FACTOR SCORES OF  
"ATTRIBUTION OF RESPONSIBILITY"

Source of variation <sup>a</sup>	df	SS	MS	F
1	1	.28125	.28125	
2	1	.28125	.28125	
3	1	.78125	.78125	
4	1	.28125	.28125	
12	1	.28125	.28125	7.294*
13	1	.28125	.28125	
14	1	.03125	.03125	
23	1	3.78125	3.78125	
24	1	1.53125	1.53125	7.294*
34	1	1.53125	1.53125	
123	1	3.78125	3.78125	
124	1	.28125	.28125	
234	1	1.53125	1.53125	
1234	1	.28125	.28125	
Within replicates	112	56.25000	.50223	
Total	127	71.21875		

<sup>a</sup> Source of variation: 1 = Stress: shock versus monetary loss; 2 = Leadership authority: elected versus appointed; 3 = Outcome: success versus failure; 4 = Leader style: me-first versus me-last.

\*  $p < .01$ .

also, three questions which were found confusing to subjects and/or open to varied interpretations by independent judges.

Two clear factors did emerge and an analysis of variance was conducted on factor scores of the items involved (Tables 1 and 2).

Factor 1 was labeled Perceived Leader Competence. As can be seen in Figure 2, the money-versus-shock manipulation produced a statistically significant effect,  $F(1, 112) = 5.4233$ ,  $p < .01$ , on the perception of leader competence. Where monetary loss was the threat, the leader was seen as much less competent than when shock was the threat.

This important finding lends support to the criticism of Mintz's (1951) methodology by Kelley et al. (1965) that monetary loss is a very different form of threat or panic inducer compared to shock. The subjects decidedly do respond to the situation differentially under these two conditions.

The more positive evaluation of the leader in terms of competence attributed to him in stress situations is a partial replication of the Sargent and Williamson (1966) study, which found that the group reacted more favorably to a leader under stress than nonstress and was especially true when the leader was success-



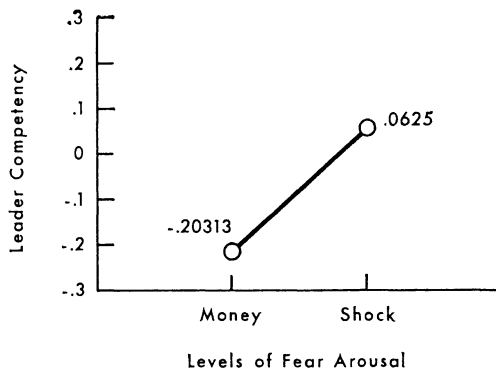


FIGURE 2. Leader competence based on factor scores.

ful to some extent. It is reasonable to speculate that the subjects saw their leader as generally successful for in no instance did they suffer, only occasionally did another person lose out—and he may have “deserved” it, as was predicted from the research by Lerner (1965, 1966).

Factor 2 was labeled the Attribution of Responsibility factor. Two interactions proved significant in the analysis of the scores.

The interaction of leadership style and source of authority shows an interesting relationship between attribution of responsibility and the election–appointment variable. Hollander and his co-workers and Sisti (1972) all found support for the contention that elected leaders receive more responsibility for the outcome than appointed leaders. This finding was supported,  $F(1, 112) = 7.294$ ,  $p < .01$ , by these data; but, in addition, it can be seen that this relationship is only valid if the leader's style is the me-first one. If the leader is a me-last leader, then the attribution of responsibility relationship is reversed (Figure 3), and dramatically so. If the me-first leader is perceived by the subjects as fulfilling the leader role in an expected manner this finding is readily interpretable. The reward-structure hypothesis predicts that individuals will take advantage of an opportunity to secure their own safety. The leadership format in this study allows just this possibility. If the leader did not take advantage of this chance to secure his own safety his leadership could be perceived as unusual. The me-first leader fulfills expectancies and is therefore seen more positively. Julian, Hollander, and Regula

(1969) anticipate this interaction of style and authority when they state that election makes the leader more vulnerable to devaluation if he is perceived as incompetent or unsuccessful. The me-last leader can be perceived as either a martyr-type leader or as a leader who fails to act as anyone else would given the same situation. The martyr fails to follow reward-structure thinking and, therefore, may be seen as incompetent or foolish. It should be remembered, additionally, that Lerner's (1965, 1966) work suggests that martyrs are devalued. Thus, the reaction to elected or appointed leaders is not just a function of their source of authority, but also the style of leadership the leader adopts once in power. This is also suggested by the diverse reaction of followers to various leadership styles in Lewin et al.'s (1939) research. The demonstration of this interaction may well explain the conflicting findings concerning whether leaders selected by election or appointment receive high or low attribution of responsibility.

The second significant interaction,  $F(1, 112) = 5.423$ ,  $p < .01$ , in Factor 2 is that of source of authority, leadership style and level of panic or threat (shock versus monetary loss). Figure 4a demonstrates that the three-way interaction has the same relationship of attribution of responsibility, leader style and elected versus appointed as in Figure 3 when stress is high (shock). If the stress is reduced (Figure 4b) the relationship changes. Under low stress the elected leader always receives higher attribution of responsibility than the appointed leader. From these data it is ap-

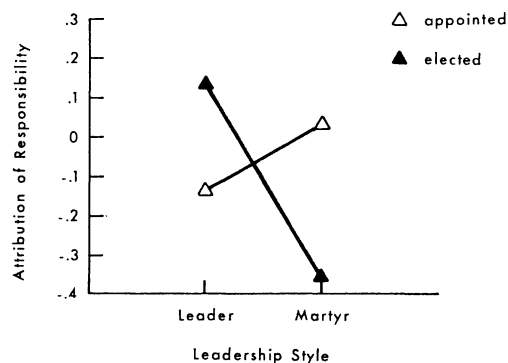


FIGURE 3. Attribution of responsibility based on factor scores. (Leadership style.)

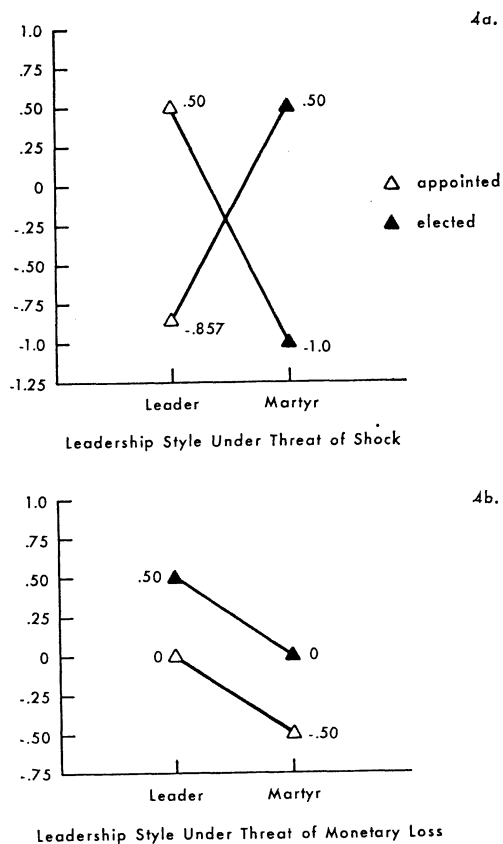


FIGURE 4. Attribution of responsibility based on factor scores. (4a. Leadership style under threat of shock. 4b. Leadership style under threat of monetary loss.)

parent that (a) "panic behavior" is a function of the stress level involved as Kelley et al. (1965) stated, (b) that the conflicting findings of whether more attribution of responsibility goes to elected leaders or appointed leaders is resolvable when it is realized that leadership style and level-of-stress are both important variables that must be systematically manipulated in order to get predictable results. This again supports the conclusion that there is a weakness in Mintz's "panic" manipulation as a useful variable in producing paniclike behavior.

#### Control Group

By pooling all the data in the shock-with-leader groups and the data in the monetary loss-with-leader groups ( $df = 63$  for each experimental group) data from the resultant

two experimental groups were analyzed with the two control groups ( $df = 7$  for each control group) in a one-way analysis of variance (Table 3).

In terms of fear aroused by the situation shock was much more threatening than the fear of monetary loss. The least fear aroused was in the leaderless-money-loss group; the next least fearful was the led-money-loss group; next, shock with a leader present was fear arousing, and finally, the most fearful situation had shock as the threat and no leader present (Scheffé test,  $p < .001$ ). This ordering does not completely fit the concept that groups with leaders would have less fear than leaderless groups, but it does, in general, support this prediction and that shock is more fear arousing than monetary loss.

The hypothesis that group incoordination would increase under higher threat was substantiated by the measure of the number of "traffic jams" (Table 4). Very clear support was also found for the hypothesis that led groups would have less incoordination, "traffic jams," than leaderless groups. The rank ordering for jam-ups was experimental group-money; experimental group-shock; control group-shock; control group-money, with differences significant at the .001 level based on a Scheffé test.

#### CONCLUSIONS

This study has provided several potential contributions to the literature.

First, the methodological equipment problems of studying panic behavior were reduced. The "panic simulator" developed here ex-

TABLE 3  
CONTROL GROUPS VERSUS EXPERIMENTAL GROUPS  
ANALYSIS OF VARIANCE AND TREATMENT  
MEANS ON FEAR AROUSAL

Variable	Treatment <i>M</i>	No. repli- cations	Rank order
Experimental			
Money	3.5938	64	1*
Shock	7.0156	64	3*
Control			
Shock	4.0625	8	4*
Money	5.7500	8	2*

\* Differences between variable orders are significant at .001 as determined by a Scheffé test.

tended Mintz's technique and added the additional necessary factor of stress to produce paniclike behavior.

Second, the study seems to support the conclusions that Mintz's (1951) manipulation—panic-behavior-producing monetary loss—does not produce the same kind of behaviors as the threat of real bodily harm. It is suggested by these findings that future research into panic behavior use as high a level of perceived threat as ethically possible.

Third, leadership has been shown to be a significant factor in the behavior of panic-stricken individuals. Leadership can reduce the incoordination that can make a minor crisis a major tragedy. In adding to the leadership-under-stress literature this study found that leaders are seen as more competent as stress increases. This may account for their effectiveness.

Fourth, the style of leadership also affects the evaluation of the leader's capabilities. The leader who leads in a style that is expected, given the circumstances, is seen more positively in all respects than the martyr-type leader who is, as Lerner (1965, 1966) predicted, devalued. It appears that these data support a notion that the negative value to the subjects of nonfulfillment of leadership expectancies outweighs their obvious observation that the me-first leader uses his power to protect himself and further jeopardize his followers. This apparent contradiction in reward-structure values merits further study.

Finally, the use of attribution of responsibility measures has yielded strong elected-appointed differences. Hollander and Julian (1970) demonstrated these differences only with difficulty. The use of attribution measures seems to provide a more sensitive technique than the traditional questionnaire items used in the past. In this study, elected leaders were, as predicted by Sisti (1972), given more attribution of responsibility than appointed leaders. This relationship only holds under low-stress situations; otherwise the difference in evaluation narrows and reverses its relationship.

These findings contribute to a possible resolution of the contradictory findings in the area of attribution of responsibility to the

TABLE 4  
CONTROL GROUPS VERSUS EXPERIMENTAL GROUPS  
ANALYSIS OF VARIANCE AND TREATMENT  
MEANS ON "TRAFFIC JAMS"

Variable	Treatment <i>M</i>	No. repli- cations	Rank order
Experimental			
Money	0.0	64	1*
Shock	.4375	64	2*
Control			
Shock	1.00	8	3*
Money	1.50	8	4*

\* Differences between variable orders are significant at .001 as determined by a Scheffé test.

leader. Leadership responsibility evaluation is a function of more than merely election versus appointment. The level of stress and the style of leadership must also be taken into account.

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